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IN THE

Supreme Court of the United States

OCTOBER TERM 1965

No. 617

LYLE B. BORST,

Petitioner,

v.

EDWARD J. BRENNER, Commissioner of Patents,

Respondent.

PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF CUSTOMS AND PATENT APPEALS

RICHARD WHITING,
Counsel for Petitioner,
30 Broad Street,
New York, New York (10004)

INDEX

	PAGE
PETITION	1
THE OPINIONS BELOW	2
JURISDICTION	2
QUESTIONS PRESENTED	2
STATUTORY PROVISIONS INVOLVED	3
STATEMENT OF CASE	3
REASONS FOR GRANTING THE WRIT	4
1. The holding below that an idea which had not been reduced to practice is statutory prior knowledge is in conflict with applicable decisions of this Court	4
2. There is direct conflict between the decision below and decisions of the Second and Ninth Circuit Courts of Appeals	6
3. The question presented is an important one because it challenges a principle, basic to standards of patentability which had become traditional	7
4. The question is important, furthermore, because of its serious consequence especially to inventions in the atomic energy field affected by 42 U. S. C. § 2185	8
CONCLUSION	9
APPENDIX	11

CITATIONS

CASES: PAGE

The Barbed Wire Patent, 143 U. S. 275 (1892).. 2, 6, 7
Block v. *Nathan Anklet Support Co.*, 9 F. 2d 311 (2d Cir. 1925) 6
Brenner v. *Manson*, 380 U. S. 971 (1965) 2

Clark Thread Co. v. *Willimantic Linen Co.*, 140 U. S. 481 (1891) 6n
Coffin v. *Ogden*, 18 Wall. 120 (1873) 2, 5, 6, 9
The Corn-planter Patent, 23 Wall. 181 (1874) 7

Eibel Proc. Co. v. *Minnesota & Ontario Paper Co.*, 261 U. S. 45 (1923) 7
Electric Storage Battery Co. v. *Schimadzu*, 307 U. S. 5 (1939) 7

Gayler v. *Wilder*, 10 How. 477 (1850) 5, 8n, 9
Gillman v. *Stern*, 14 F. 2d 28 (2d Cir. 1940), *cert. denied*, 311 U. S. 718 (1941) 8n

Metallizing Engineering Co. v. *Kenyon Bearing & Auto Parts Co.*, 153 F. 2d 516 (2d Cir.), *cert. denied* 328 U. S. 840 (1946) 8n

In re Schlittler, 43 C. C. P. A. (Patents) 986, 234 F. 2d 882 (1956) 3, 4, 7, 8
Stearns v. *Tinker & Rasor*, 220 F. 2d 49 (9th Cir.), *cert. denied*, 350 U. S. 830 (1955) 6

STATUTES:

28 U. S. C. §1256 2
35 U. S. C. §102(a) 1, 2, 3, 4, 5, 9
35 U. S. C. §141 4
42 U. S. C. §2185 ..... 1, 2, 3, 4, 8, 9

The Patent Act of 1790, 1 Stat. 109 4
Patent Acts of 1793, of 1800, of 1836, of 1842, of 1861 and of 1870 5

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To the Honorable Chief Justice and Associate Justices of the Supreme Court of the United States:

Petitioner, Lyle B. Borst, respectfully asks that a writ of certiorari be granted to review the judgment of the United States Court of Customs and Patent Appeals entered herein May 27, 1965. (Appendix hereto p. 1a).

That decision held, in conflict with the applicable decisions of this Court and with decisions of the Court of Appeals of the Second and Ninth Circuits, that an idea which had not been reduced to practice constitutes prior knowledge under 35 U. S. C. §102(a) and that an untested idea, expressed in a paper which had been classified as secret by the Atomic Energy Commission, is prior art under 42 U. S. C. § 2185.

Should the writ issue, the matter to be considered would be the competence of untried ideas as prior art. The cen-

tral subject would be the effectuation of this Court's decisions in *Coffin* v. *Ogden,* 18 Wall. 120 (1873), and *The Barbed Wire Patent,* 143 U. S. 275 (1892), with respect to the "classified" projects within the Atomic Energy Commission.

The Opinions Below

The opinion of the United States Court of Customs and Patent Appeals, May 27, 1965, is reported in 345 F. 2d. 851; Appendix hereto p. 2a.

The opinion of the Board of Appeals of the Patent Office, June 27, 1963, is unreported; Appendix hereto p. 11a.

The Examiner's Final Rejection, April 10, 1961, is unreported; Appendix hereto p. 17a.

The Examiner's Rejection, September 30, 1960, is unreported; Appendix hereto p. 19a.

Jurisdiction

The judgment of the Court of Customs and Patent Appeals was entered May 27, 1965, and a timely Petition for Rehearing was denied July 1, 1965. The jurisdiction of this Court is invoked under 28 U. S. C. § 1256. *Brenner* v. *Manson,* 380 U. S. 971 (No. 932, *cert. granted* April 26, 1965).

Questions Presented

Is reduction to practice essential to prove an idea expressed in writing as prior knowledge under 35 U. S. C. § 102(a)?

Is an idea expressed in a writing under secrecy within the atomic energy program of the United States, but not reduced to practice, prior knowledge under 42 U. S. C. § 2185?

Statutory Provisions Involved

35 U. S. C. § 102(a) provides:

> A person shall be entitled to a patent unless—
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent. . . .

42 U. S. C. § 2185 (Atomic Energy Act of 1954 § 155, 68 Stat. 947) provides:

> *Prior Art.* In connection with applications for patents covered by this subchapter, the fact that the invention or discovery was known or used before shall be a bar to the patenting of such invention or discovery even though such prior knowledge or use was under secrecy within the atomic energy program of the United States.

Statement of the Case

Petitioner is the inventor of a neutron amplifier which operates as an industrial source of neutrons by a chain reaction inherently safe from the hazards of an atomic explosion. On April 24, 1957, he filed application Serial No. 654,837 for a patent on that invention.

The Patent Office Examiner rejected the application citing an unpublished paper of one Samsel written and classified secret by the Atomic Energy Commission prior to petitioner's invention. Petitioner contended that the prior knowledge of 42 U. S. C. § 2185, on which the Examiner relied, must also meet the judicially established requisites of 35 U. S. C. § 102(a) and that the word "known" in 35 U. S. C. § 102(a) does not embrace an idea which has not been reduced to practice, citing *In re Schlittler*, 43 C. C. P. A. (Patents) 936, 234 F. 2d. 882 (1956), by the Court of Customs and Patent Appeals. The Examiner ruled that 42 U. S. C. § 2185 only was involved, and not 35 U. S. C.

§ 102(a), and made the rejection final. The Board of Appeals affirmed.

The Court of Customs and Patent Appeals (which had jurisdiction under 35 U. S. C. § 141) tacitly agreed with petitioner that 35 U. S. C. § 102(a) as well as 42 U. S. C. § 2185 was involved but found "illogical and anomalous" the requirement that the invention must have been reduced to practice to have been "known" under Section 102(a). The Court overruled its holding in *Schlittler* to the contrary, a result neither sought nor briefed below.

Reasons for Granting the Writ

Review by this Court is warranted for four reasons, viz:

1. The holding below that an idea which had not been reduced to practice is statutory prior knowledge is in conflict with applicable decisions of this Court.

2. There is direct conflict between the decision below and decisions of the Second and Ninth Circuit Courts of Appeals.

3. The question presented is an important one because it challenges a principle, basic to standards of patentability which had become traditional.

4. The question is important, furthermore, because of its serious consequence especially to inventions in the atomic energy field affected by 42 U. S. C. § 2185.

1. Reduction to practice is a requisite of prior knowledge established by this Court.

The expression "known or used" was introduced by the Congress in the very earliest of our patent laws, (the Patent Act of 1790, 1 Stat. 109), which provided for the grant of a patent for the invention or discovery of "any useful art, manufacture, engine, machine, or device, or any im-

provement therein not before known or used. . . ." The expression "known or used" was carried forward into the subsequent Patent Acts of 1793, of 1800, of 1836, of 1842, of 1861 and of 1870; and it is, of course, in § 102(a) of U. S. C. Title 35.

In the December Term of 1850, interpretation of the words "known or used" came to this Court in *Gayler* v. *Wilder*, 10 How. 477 (1850). The Court, by a divided vote on interpretation of the word "known", sustained the patent.

The next Supreme Court case involving interpretation of the words "known or used" was *Coffin* v. *Ogden*, 18 Wall. 120 (1873). The opinion referred to *Gayler* v. *Wilder* and quoted a proposition, not here pertinent, from that decision, observing, "Whether the proposition expressed . . . is a sound one, it is not necessary in this case to consider." (18 Wall. at 125, *quoting* 10 How. at 498).

Being thus informed by *Gayler* v. *Wilder* of the judicial confusion that could result from uncertainty as to the meaning of "known" in the patent law, the Court in *Coffin* v. *Ogden* included in its opinion language which is certainly well chosen to put at rest the idea that the words "not before known or used" are satisfied by any prior thing that failed to reach the point of consummation—that did not disclose the invention clothed in substantial forms which demonstrate at once its practical efficacy and utility.

The definitive and familiar language of *Coffin* v. *Ogden* is:

> . . . The invention or discovery relied upon as a defence, must have been complete, and capable of producing the result sought to be accomplished. . . . If the thing were embryotic or inchoate; if it rested in speculation or experiment; if the process pursued for its development had failed to reach the point of consummation, it cannot avail to defeat a patent founded upon a discovery or invention which was completed, while in the other case there was only

> progress, however near that progress may have approximated to the end in view. The law requires not conjecture, but certainty. If the question relate to a machine, the conception must have been clothed in substantial forms which demonstrate at once its practical efficacy and utility . . . Until his work *is done*, the inventor has given nothing to the public. (18 Wall at 124-25. *Citations omitted, original emphasis.*)

This ruling has never been departed from or modified. It was repeated substantially verbatim in the famous case, *The Barbed Wire Patent*, 143 U. S. 275, 282-85 (1892).*

2. Conflict with Decisions of Circuit Courts of Appeals.

The decision below is in direct conflict with the Second Circuit decision of Judge Learned Hand in *Block* v. *Nathan Anklet Support Co.*, 9 F. 2d 311 (2d Cir. 1925). As to the meaning of "known", the Court of Appeals held:

> . . . The word has acquired a somewhat esoteric meaning imputed by the courts to accomplish the purpose of the statute. Mere acquaintance with the invention, even if disclosed, is not enough; nothing short of "reduction to practice" will do, whatever that may mean. (9 F. 2d at 313).

Moreover, there is a direct conflict with the Ninth Circuit, *Stearns* v. *Tinker & Rasor*, 220 F. 2d 49 (9th Cir.), *cert. denied*, 350 U. S. 830 (1955):

> . . . An invention is "known" as that word is used in the statute, when it is "reduced to practice". It follows here, on the same principle, that Mudd and his associates and his employer cannot be found to have "known" the practical advantages of a rolling spring as an electrode before they ever rolled a spring for that purpose. (220 F. 2d at 56).

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* See also *Clark Thread Co.* v. *Willimantic Linen Co.*, 140 U. S. 481 (1891), where the court declared:

> . . . A conception of the mind is not an invention . . . [This proposition has] been so often reiterated as to be elementary. (140 U. S. at 489).

3. The Challenge to Traditional Standards.

The rule that prior art which falls short of achievement is not such "knowledge" as to bar the grant of a patent to an inventor who does achieve the wished-for progress may be said to be the backbone of our patent system. It explains, we suppose, the early requirement that an application for patent must be supported by a model; upon it rests the rule of interference practice that the first to conceive may by lack of diligence in *reducing to practice* lose his right to a later conceiver who first reduces to practice; it underlies the rule that the last step wins, as exemplified in such cases as *The Barbed Wire Patent*, 143 U. S. 275, 283 (1892) and *Eibel Proc. Co.* v. *Minnesota & Ontario Paper Co.*, 261 U. S. 45, 63 (1923); and it goes to the incompetence as statutory prior knowledge of the information found in abandoned patent applications, *The Corn-planter Patent*, 23 Wall. 181 (1874), or the knowledge here of uses abroad, *Electric Storage Battery Co.* v. *Schimadzu*, 307 U. S. 5 (1939).

The Court of Customs and Patent Appeals applied the rule in *In re Schlittler*, 43 C. C. P. A. (Patents) 986, 234 F. 2d 882, 886 (1956):

> The foregoing authorities are clearly to the effect that reduction to practice is an essential part of the prior knowledge or use by others which is necessary to anticipate a claim of a patent application within the meaning of the involved statute.

The Court in its decision below expressly overruled *Schlittler*.* The facts are clear** and the holding unequivocal:

> The remaining consideration regarding the status of Samsel as evidence of prior knowledge directly

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* The Court made no attempt to explain away the line of authority which it found persuasive in *Schlittler*.

** The Samsel paper opens with the observation:

> An idea has just occurred to me, which *if it works* successfully, will be of major importance to the science of the application of atomic energy to practical purposes. (*Emphasis added*).

> calls into question the correctness of the unequivocal holding in *Schlittler* that the knowledge must be of a reduction to practice, either actual or constructive. After much deliberation, we have concluded that such a requirement is illogical and anomalous, and to the extent *Schlittler* is inconsistent with the decision in this case, it is hereby expressly overruled. (345 F. 2d at 854-55 [Appendix hereto p. 8a]).

Its error lay not its misapplication of established law, but in wholly refuting it and seeking a new standard of patentability.*

4. 42 U. S. C. § 2185 and the Impact of the Decision on Inventions in the Atomic Energy Field.

A close reading of Section 2185 would indicate a purpose that the section not be disassociated from the Patent Act and the judicial construction basic to it. Section 2185 states that:

> . . . the fact that the invention was known or used before . . . *even though* such prior knowledge . . . was under secrecy . . . (Emphasis ours).

The words "*even though*" are especially apt in view of the established principle that inventions which are "known or used before" were a bar only if known or used publicly.**

Although 42 U. S. C. § 2185 lifts from work done within the atomic energy program of the United States the effect of secrecy to debar it as prior art, there is no room for the

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* ". . . [T]he criterion should be whether the disclosure is *sufficient to enable one skilled in the art to reduce the disclosed invention to practice.*" (345 F. 2d at 855 [Appendix hereto p. 8a]. *Original emphasis.*).

** Cf. *Gayler* v. *Wilder*, 10 How. 477, 497 (1850) (". . . by knowledge and use the legislature meant knowledge and use existing in a manner accessible to the public."); *In re Schlittler*, 43 C.C.P.A. (Patents) 986, 234 F. 2d. 882 (1956); *Gillman* v. *Stern*, 114 F. 2d. 28 (2d Cir. 1940) (L. Hand, J.), *cert. denied*, 311 U. S. 718 (1941); and *Metallizing Engineering Co.* v. *Kenyon Bearing & Auto Parts Co.*, 153 F. 2d. 516 (2d Cir.) (L. Hand, J.), *cert. denied*, 328 U. S. 840 (1946).

conclusion that the Act lifted from the atomic energy program the need to carry allegedly anticipating work to the point of consummation by actual or constructive reduction to practice.

Coffin v. *Ogden* erected firmly and explicitly the basic rule of interpretation which has dominated the situation ever since and which led to two fundamental results:

1) avoidance of judicial uncertainty and

2) constant pressure on inventors to convert their conceptions into completed inventions.

The decision in this case, if it is not reversed, would destroy both of these fundamental safeguards. It would lead to the precise uncertainty expressed by *Gayler* v. *Wilder*. The pressure on inventors in the Atomic Energy Commission to carry forward their conceptions to completed inventions would be lifted. 42 U. S. C. § 2185 would be interpreted to bring within the purview of 35 U. S. C. § 102(a) all the "classified" untried ideas proposed within the Atomic Energy Commission, thereby imposing a risk so extensive and so indeterminable as to make it impracticable for venture capital in this field to plan at all for the protection of the patent law. These results would not promote the progress of the atomic energy art.

Conclusion

For the foregoing reasons it is respectfully submitted that this petition for a writ of certiorari should be granted.

Respectfully,

RICHARD WHITING
Counsel for Petitioner

September 27, 1965

APPENDIX

INDEX TO APPENDIX

	PAGE
Judgment of the United States Court of Customs and Patent Appeals	1a
Opinion of the United States Court of Customs and Patent Appeals	2a
Opinion of the Board of Appeals of the Patent Office	11a
Examiner's Final Rejection	17a
Examiner's Rejection	19a

Judgment

UNITED STATES COURT OF CUSTOMS AND PATENT APPEALS

OCTOBER TERM, 1964

May 27, 1965

IN THE MATTER OF THE APPLICATION *of* LYLE B. BORST.	Patent Appeal No. 7316. Subject Matter: Neutron Amplifier. Serial No. 654,637.

Said appeal having heretofore been brought on to be heard before the court and due consideration thereon having been had, it is—

ORDERED that the decision of the Board of Appeals be, and the same is hereby, affirmed in part and reversed in part.*

I, GEORGE E. HUTCHINSON, Clerk of the United States Court of Customs and Patent Appeals, do hereby certify that the above judgment and the attached opinion are true and correct copies of the judgment and opinion of said United States Court of Customs and Patent Appeals filed the 27th day of May, A.D. 1965, in the above-entitled appeal, as the same remain upon the files and records of said court.

WITNESS my hand and the seal of this court this 6th day of July, A.D. 1965.

(Signed) GEORGE E. HUTCHINSON
Clerk.

* Petition for rehearing denied July 1, 1965 [Clerk's footnote].

Opinion

UNITED STATES COURT OF CUSTOMS AND PATENT APPEALS

IN THE MATTER OF THE APPLICATION
of
LYLE B. BORST

October Term, 1964.
Patent Appeal No. 7316
Serial No. 654,837.

May 27, 1965

SMITH, Judge.

The invention for which appellant seeks a patent comprises means for safely and effectively controlling a relatively large neutron output by varying a small and easily controlled neutron input source. The application, serial No. 654,837, filed April 24, 1957, is aptly titled "Neutron Amplifier." Claim 27 illustrative of appealed claims 27-33 and reads:

> 27. A subcritical neutron amplifier having a controllable neutron source and, associated with said source in cascade, an input region of neutron moderator material in which neutrons of epithermal energy from the source are moderated to thermal energy levels, a sequent fuel region containing neutron fissionable material in mass concentration and geometric configuration adapted to augment the neutron flow by a subcritical reaction, and an output region comprising a thermal neutron barrier substantially opaque to thermal neutrons but transmissive to epithermal neutrons, whereby an amplified neutron output is subcritically produced.

Claims 30, 31 and 32 are quite similar to claim 27 and need not be separately discussed. Claim 28 is dependent upon

claim 27 and calls for means to vary the transparency[1] of the neutron barrier. Claim 29 further provides that the transparency-varying means of claim 28 be such that the neutron flow may be modulated as a function of time. Claim 33 adds to claim 32 the limitation that the fuel be in an hydrogenous environment.

In the embodiment illustrated and described in appellant's application, the amplifier employs a Van de Graff accelerator as a source supplying neutrons to an initial stage composed of three regions or zones. The first of these, the input or moderator region, retards the speed of the neutrons entering from the source so that only thermal (low-energy) neutrons are passed to the second region. The second, or fuel region, consists of fissionable material, such as uranium or a water solution of uranyl nitrate, which is responsive to the entering thermal neutrons to effect fission by which more epithermal (high-energy) neutrons are evolved. The second region is not of critical mass and thus by design it is incapable of exploding while producing neutrons. The third region is a neutron barrier which functions to prevent transmission of thermal neutrons to the moderator region of the next succeeding stage, and allows only epithermal neutrons to pass.

This third region may be provided with means to vary its transparency by a shutter-like array of cadmium strips adjusted to provide feedback control. In addition, the transparency-varying means may be provided with means responsive to a time-varying function so that the feedback neutron flow may be modulated as a function of time. It is also disclosed that a number of such amplifier stages may be cascaded to any given degree of neutron flux enhancement.

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[1] As used in this art, the term "transparency" refers to the ease with which a neutron can pass the barrier.

Opinion of the United States Court of Customs and Patent Appeals

Appellant asserts that the claimed invention affords a revolutionary approach to the safety problem in the nuclear reactor art. As the amplifier is said to be inherently safe from divergent nuclear chain reaction, the intricate systems needed to monitor and control the operation of conventional neutron amplifiers to prevent an explosion are unnecessary.

The single reference relied upon by the Patent Office in rejecting the appealed claims is an Atomic Energy Commission document entitled "KAPL-M-RWS-1, A Stable Fission Pile with High Speed Control." The document is in the form of an unpublished memorandum authored by one Samsel, and will hereinafter be referred to as "Samsel." Samsel is dated February 14, 1947 and was classified as a secret document by the Commission until March 9, 1957, when it was declassified. In essence, Samsel sets forth and discusses the problems present in the control of a nuclear reactor, the concept of use of successive fuel stages to effect such control, and a description of the arrangement, composition and relative proportions of materials required to obtain the sought-for results. Samsel is prefaced by a statement that it was made to record an idea, and it nowhere indicates that the idea had been tested in an operating reactor.

The Patent Office does not invoke Samsel as a publication (which it apparently was not, at any pertinent date). Rather, the contention is that Samsel constitutes evidence of prior knowledge within the meaning of 35 USC 102(a).

While there seems to be some disagreement on the part of the solicitor, we think the most reasonable interpretation of the examiner's rejection, and one which is concurred in by the board and by appellant, is that claims 27, 30, 31 and 32 are fully met by Samsel and thus the subject matter defined therein is unpatentable because it was known by another in this country prior to appellant's invention

thereof. As to claims 28, 29 and 33, even though not fully met by Samsel, they are said to be obvious within the meaning of 35 USC 103 in view of the prior knowledge evidenced by Samsel.

Our own independent consideration of Samsel has convinced us that it contains adequate enabling disclosure of the invention of claims 27 and 30-32, see *In re Sheppard*, 52 CCPA 859, 339 F. 2d 238, 144 USPQ 42 and *In re LeGrice*, 49 CCPA 1124, 301 F. 2d 929, 133 USPQ 365, and appellant does not appear to contend otherwise.[2] Rather, appellant contends that Samsel is not available as evidence of prior knowledge under sections 102(a) and 103. Appellant also argues that, even if Samsel is available, the subject matter of claims 28, 29 and 33 is not obvious in view thereof. We agree with this characterization of the essential issues presented on this appeal, and will treat them in the order stated above.

In the case of *In re Schlittler*, 43 CCPA 986, 234 F. 2d 882, 110 USPQ 304, this court was presented with the following situation: A manuscript containing an anticipatory disclosure of the appellants' claimed invention had been submitted to *The Journal of the American Chemical Society* and was later published. The date to which the appellants' application was entitled for purposes of constructive reduction to practice was earlier than the publication date of the *Journal* article, and therefore the Patent Office did not contend that the "printed publication" portion of section 102(a) was applicable. However, the manuscript bore a notation that it had been received by the publisher on a date prior to the effective filing date of the appellants'

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[2] Appellant does argue that there is a mathematical defect in the Samsel disclosure. While such may or may not be the case, appellant has failed to show that a person of ordinary skill in the art would not have been able to reduce the Samsel conception to practice based on the information disclosed therein.

application. On the basis of this notation the Patent Office argued that the article constituted sufficient evidence of prior knowledge under section 102(a).

After an exhaustive review of the authorities, and of the legislative history of the Patent Act of 1952, this court rejected the contention of the Patent Office, and concluded that such a document was not proper evidence of prior knowledge. In reversing, the court stated (43 CCPA at 992):

> In our opinion, one of the essential elements of the word "known" as used in 35 U. S. C. 102(a) is knowledge of an invention which has been completed by reduction to practice, actual or constructive, and is not satisfied by disclosure of a conception only.

And therefore, since the *Journal* article, "at best, could be evidence of nothing more than conception and disclosure of the invention," the

> • • • placing of the Nystrom article in the hands of the publishers did not constitute either prima facie or conclusive evidence of knowledge or use by others in this country of the invention disclosed by the article, within the meaning of Title 35, Section 102(a) of the United States Code, since the knowledge was of a conception only and not of a reduction to practice.

Another aspect of the court's discussion in *Schlittler* involved the well-established principle that "prior knowledge of a patented invention would not invalidate a claim of the patent unless such knowledge was available to the public." After reaffirming that principle, the court went on to state:

> Obviously, in view of the above authorities, the mere placing of a manuscript in the hands of a publisher does not necessarily make it available to the public within the meaning of said authorities.

However, the court did not go on to determine whether the *Journal* article was in fact available to the public, since such determination was deemed unnecessary for disposition of the case, under the court's theory.

We shall consider first the public availability aspect of the *Schlittler* case. Although that portion of the *Schlittler* opinion is clearly dictum, we think it just as clearly represents the settled law. The knowledge contemplated by section 102(a) must be accessible to the public. In addition to *Schlittler* and cases cited therein, see, e.g., *Minneapolis-Honeywell Regulator Co.* v. *Midwestern Instrument, Inc.*, 298 F. 2d 36, 131 USPQ 402 (7th Cir., 1961); *Rem-Cru Titanium, Inc.* v. *Watson*, 152 F. Supp. 282, 114 USPQ 529 (D. D. C. 1957).

In the instant case, Samsel was clearly not publicly available during the period it was under secrecy classification by the Atomic Energy Commission. We note that the date of declassification, however, was prior to appellant's filing date, and it is perhaps arguable that Samsel became accessible to the public upon declassification. But we do not find it necessary to decide that difficult question, for there is a statutory provision which is, we think, dispositive of the question of publicity. Section 155 of the Atomic Energy Act of 1954 (42 USC 2185) provides:

> In connection with applications for patents covered by this subchapter, the fact that the invention or discovery was known or used before shall be a bar to the patenting of such invention or discovery even though such prior knowledge or use was under secrecy within the atomic energy program of the United States.

We think the meaning and intent of this provision is so clear as to admit of no dispute: With respect to subject matter covered by the patent provisions of the Atomic Energy

Act, prior knowledge or use under section 102(a) *need not* be accessible to the public. Therefore, Samsel is available as evidence of prior knowledge insofar as the requirement for publicity is concerned.

The remaining consideration regarding the status of Samsel as evidence of prior knowledge directly calls into question the correctness of the unequivocal holding in *Schlittler* that the knowledge must be of a reduction to practice, either actual or constructive. After much deliberation, we have concluded that such a requirement is illogical and anomalous, and to the extent *Schlittler* is inconsistent with the decision in this case, it is hereby expressly overruled.

The mere fact that a disclosure is contained in a patent or application and thus "constructively" reduced to practice, or that it is found in a printed publication, does not make the disclosure itself any more meaningful to those skilled in the art (and thus, ultimately, to the public). Rather, the criterion should be whether the disclosure is *sufficient to enable one skilled in the art to reduce the disclosed invention to practice.* In other words, the disclosure must be such as will give possession of the invention to the person of ordinary skill. Even the act of publication or the fiction of constructive reduction to practice will not suffice if the disclosure does not meet this standard. See *In re Sheppard* and *In re LeGrice,* supra.

Where, as is true of Samsel, the disclosure constituting evidence of prior knowledge contains, in the words of the Board of Appeals, "a description of the invention fully commensurate with the present patent application," we hold that the disclosure need not be of an invention reduced to practice, either actually or constructively. We therefore affirm the rejection of claims 27, 30, 31 and 32.

It remains for us to consider the correctness of the rejection of claims 28, 29 and 33 as obvious in view of the

prior knowledge evidenced by Samsel. As previously indicated, claim 28 adds to basic claim 27 the limitation that means be provided to vary the transparency of the neutron barrier. Appellant's specification discusses several such means, including the shutter-like array of cadmium strips referred to earlier. Such a transparency-varying arrangement permits controlled feedback so that once the system has reached a desired neutron generation level, the neutron source may be removed and the system will be maintained in self-sustaining but convergent operation.

The examiner's position, affirmed by the board, was that the provision of such means would be obvious to one of ordinary skill in the art. The argument seems to be that since Samsel discloses a neutron barrier, it can be reasoned therefrom that the thicker the barrier the greater the obstruction to the passage of neutrons, and therefore it would be obvious to vary the thickness of the barrier if it were desired to vary the neutron transparency of the barrier. We note, however, that there is absolutely no hint in Samsel that a variable barrier would even be desirable, much less possible to construct. From the evidence of record, it appears that the concepts of a variable barrier and means for accomplishing it are wholly appellant's and were manifestly unobvious at the time appellant made his invention.

Claim 29, as previously pointed out, simply adds a further limitation to claim 28. We think the rejection of claim 29 was erroneous for the same reasons as the rejection of claim 28.

Claim 33 specifies that the fissionable fuel be in an "hydrogenous environment." The examiner felt that it would be obvious to "substitute the equivalent water moderator for the carbon moderator disclosed by Samsel because to do so would involve mere skill in the art." We think this reasoning is erroneous on two grounds. First, there is

nothing in the record which shows the equivalency of water to carbon as a moderator. Second, and much more importantly, appellant's "hydrogenous environment" limitation is directed to the *fuel* zone rather than the *moderator* zone.

The solicitor, apparently recognizing the inadequacy of the examiner's treatment of claim 33, asks us to take judical notice of a textbook which allegedly discloses the use of an aqueous solution of uranyl sulfate in the core of a homogenous reactor. We decline to take notice of this reference, for it is in a highly technical area of subject matter and we have no way of evaluating its accuracy or repute in the art. As we said when confronted with a similar request in *In re Petering*, 49 CCPA 993, 999, 301 F. 2d 676, 133 USPQ 275, "Such a reference should have been the subject of a discussion between appellants and the experts in the Patent Office and we do not consider it appropriate for us to attempt to evaluate this reference without the benefit of such discussion."

For the foregoing reasons, the rejection of claims 27, 30, 31 and 32 is *affirmed*, and the rejection of claims 28, 29 and 33 is *reversed*.

MODIFIED

WORLEY, C. J., took no part in the consideration or decision of this case.

Opinion of the Board of Appeals of the Patent Office

Hearing: May 28, 1963 Opinion mailed: June 27, 1963

IN THE UNITED STATES PATENT OFFICE

BEFORE THE BOARD OF APPEALS

Ex parte LYLE B. BORST

Application for Patent filed April 24, 1957, Serial No. 654,837. Neutron Amplifier.

Davis, Hoxie, Faithful and Hapgood and Griswold & Burdick for appellant.

Before Duncombe and Magil, Examiners-in-Chief, and Andrews Acting Examiner-in-Chief.

Andrews, Acting Examiner-in-Chief.

This is an appeal from the final rejection of claims 27 to 33. Claims 16 and 34 have been allowed.

Claim 27 is reproduced as illustrative:

27. A subcritical neutron amplifier having a controllable neutron source and, associated with said source in cascade, an input region of neutron moderator material in which neutrons of epithermal energy from the source are moderated to thermal energy levels, a sequent fuel region containing neutron fissionable material in mass concentration and geometric configuration adapted to augment the neutron flow by a subcritical reaction, and an output region comprising a thermal neutron barrier substantially opaque

to thermal neutrons but transmissive to epithermal neutrons, whereby an amplified neutron output is subcritically produced.

The reference relied on is:

KAPL-M-RWS-1, A Stable Fission Pile with High Speed Control, Samsel, Feb. 14, 1947; Declassified March 9, 1957; 7 pages;

The subject matter on appeal is subcritical nuclear reactor in which the fuel is disposed in stages. These stages progress in size and are separated by barrier and moderator materials so arranged that a smaller stage supplies additional neutrons to a subsequent larger stage. In this manner a relatively small easily controlled neutron source can be used to control the reactor. The essential details of appellant's device are set out at pages 1 and 2 of the answer.

The Samsel reference is adequately described at pages 2 and 3 of the answer.

Claims 27, 30, 31 and 32 stand rejected as fully met by the Samsel reference and claims 28, 29 and 33 stand rejected as unpatentable over that reference since the Examiner considers the concept of varying the transparency of the neutron barrier, as set out in claim 28, of varying the transparency as a function of time, as set out in claim 29 and of using a water moderator, rather than carbon, as set out in claim 33, to be obvious to those having the ordinary skill in the art.

Appellant contends that the Samsel reference is not available as a reference in this case because it is not a publication and it is evidence only of a conception of appellant's invention, and fails to establish any reduction of practice, that would qualify it as "prior knowledge" under 35 U. S. C. 102(a), as defined by *In re* Schlittler *et al.*, 43

CCPA 986, 1956 C. D. 366, 709 O. G. 496, 234 F. (2d) 832, 110 USPQ 304. Appellant also contends that the skill of the art set out in 35 U. S. C. 103 must exclude the skills of those persons engaged in secret activities within the Atomic Energy Commission. Appellant further alleges that the Samsel arrangement could not have achieved success because he was mistaken as to the value of an assumed efficiency factor that was realizable within the skill of the art.

The fundamental issue before us is whether or not the Samsel document is a proper reference. The admissibility of the Samsel document as a reference appears to rest solely on 42 U. S. C. 2185 which reads as follows:

> "In connection with applications for patents covered by this Chapter, the fact that the invention or discovery was known or used before shall be a bar to the patenting of such invention or discovery even though such prior knowledge or use was under secrecy within the atomic energy program of the United States."

Thus if it appears that the Samsel document constitutes evidence of "prior knowledge," the fact that this knowledge was under secrecy does not prevent this prior knowledge serving as a bar to the issuance of a patent to appellant on the instant invention.

The Samsel document on its face is a typewritten memorandum report dated February 14, 1947, which appears to be an official classified document of the Atomic Energy Commission having a very limited internal distribution within the Commission. The document was declassified on March 9, 1957, which was about six weeks prior to the filing date of the present application.

The content of the Samsel document is a recording of the problems present in the control of a nuclear reactor, the conception of use of successive fuel stages to effect the

control and a description of the arrangement, composition and relative proportions of the materials required to effect the sought for results.

The report is prefaced by a statement that the report was of an idea and nowhere is it indicated that the idea had been tested out in an operating reactor.

That this document constitutes evidence of "prior knowledge" of the subject matter described in the document in the natural meaning of those words is abundantly clear from the date of ten years prior to the filing of the present application and the clear explicit explanation of the subject matter.

The fact that this prior knowledge was of an "invention or discovery" is attested to by the fact that a distinct problem was identified, a conception obtained as to how this problem could be overcome, and a detailed description as to how the concept was to be embodied in a reactor that would carry out the concept. This is far more than a mere idea or concept with the major details yet remaining to be worked out. The construction of an operating model is not a prerequisite of an invention or discovery otherwise the present application would not qualify since we have found no indication in the record before us that an operating device was constructed. The filing of a paper in the Patent Office may afford the invention or discovery the legal status of a constructive reduction to practice but it can not confer the qualities of an invention to that which previously was not. Hence we find no difficulty in concluding that the Samsel report is evidence of prior knowledge of an invention.

This prior knowledge of the subject invention, notwithstanding its secrecy within the Atomic Energy Commission, becomes a bar to the issuance of a patent by operation of law in accordance with section 2185, quoted above.

Appellant strongly urges that the Samsel report is not evidence of prior knowledge of an invention or discovery but only of a prior conception, in the absence of a practical operating embodiment thereof. Appellant finds comfort for his position in the language used in the opinion in *In re Schlittler et al., supra.* However, in the Schlittler case the facts are quite different and a different statute was being interpreted. There the document contents were known only to the author and his publishing editor and in no sense was this a public knowledge as required by 35 U. S. C. 102(a) but specifically exempted in the present case by 42 U. S. C. 2185. In the Schlittler case the court found in the document only evidence of a conception of the invention but here we find in the document a description of the invention fully commensurate with the present patent application, both being based on well-founded deductions and speculations but without actual testing.

Although no case directly in point has been called to our attention and no evidence of legislative intent appears of record we believe the purpose of Section 2185 to be self-evident. The Government of the United States finds itself in the position of being harassed by patents issued to subsequent inventors for inventions and discoveries which it already has acquired from the first inventors but which it elected to keep secret under its atomic energy program.

As appellant would have us interpret Section 2185, the Government would be protected as to structures actually built but not for inventions in which it finds no necessity to test or in which testing might compromise either public health or security. We do not consider the Atomic Energy Act to be of such limited scope but rather is a statute affected with the public interest and is to be given the broadest possible interpretation, other previous statutes notwithstanding.

Opinion of the Board of Appeals of the Patent Office

With respect to the Samsel report, persons of ordinary skill of the art would be the coworkers of Samsel to whom the report was addressed. Any other holding would nullify the effectiveness of Section 2185 since any document must be viewed against the background of the knowledge of those to whom it was addressed. It is self-evident that the skill of the art was adequate to understand the principles of the invention described in the Samsel report and to carry it forward even though an erroneous coefficient for efficiency was selected by Samsel. The persons who design and build reactors have demonstrated the routine character of the measures necessary to operate a controlled reactor.

The Examiner has applied the Samsel reference in detail to each of the appealed claims at pages 3 to 7 of the answer and in this we find no reversible error.

The rejection of claims 27 to 33 is sustained.

The decision of the Examiner is affirmed.

Examiner's Final Rejection

U. S. DEPARTMENT OF COMMERCE
PATENT OFFICE
WASHINGTON

April 10, 1961

Responsive to letter filed March 28, 1961.

Claims 27-33 are again rejected on the art as applied of record. The applicant's arguments have been considered but are not persuasive. There is no basis for the applicant's assumption that "known or used" as set forth in Sec. 155 of the Atomic Energy Act should have the same interpretation as when the phrase is used in Sec. 102 of the Patent Statute. An adequate foundation for the applicant's assumption is necessary since the function of Sec. 155 is to permit the use, as prior art, of material which could not be so used under 35 U. S. C. 102.

Since the provision of Sec. 155 was made to specifically make available as prior art information kept under secrecy; it is not seen why the use of such information should be limited to rejections under 35 U. S. C. 102 but should also be useful in a rejection under 35 U. S. C. 103.

By the very nature of Sec. 103 the requirement that the claimed invention be reduced to practice in the reference is obviated since the Section denies patentability to *novel* but obvious subject matter.

The applicant's invention lies in the use of sub-critical reactors in cascade arrangement each stage separated by a cadmium neutron barrier. The issue is whether the claimed subject matter would be obvious to a worker in the art from the teachings of the prior art. 35 U. S. C. 103.

What is the art involved?

The nuclear reactor art. Who were the persons having ordinary skill in the art? As of the dates of the reference

and the filing date of this application, the majority of the workers in the art were or had been Atomic Energy Commission employees and as such had access to the reference. It is noted the applicant was a former employee of the AEC and as such also had access to the reference.

For the reasons set forth in the final rejection, the claimed subject matter would have been obvious to a worker in the art from a perusal of the prior art set forth in the reference.

Since the purpose of Sec. 155 is to protect the public by making available as prior art the vast amount of information gathered and developed at the public expense and kept under secrecy; it is felt that the term "known" should include such disclosures as is involved in the reference under consideration. A failure to do so will have the ultimate effect of making a minor and patentably insignificant change in a process or device disclosed in a classified Atomic Energy Commission Document sufficient to predicate patentability since according to applicant's position the reference is not available as prior art. Such a strict interpretation of Sec. 155 would go far in the emasculation of a statute passed in the public interest.

Claims 1, 15 and 17-26 are cancelled.
Claims 27-33 are rejected.
Claims 16 and 34 are allowable.
This action is FINAL.

S. F. STONE/wwl Acting Examiner

Examiner's Rejection

U. S. DEPARTMENT OF COMMERCE
PATENT OFFICE
WASHINGTON

September 30, 1960

Responsive to amendment filed January 26, 1960.

Additional reference made of record:

KAPL-M-RWS-1, A Stable Fission Pile With High Speed Control, Samsel, Feb. 14, 1947 Declassified March 9, 1957, 7 pages, Copy in Div. 46.

Claims 27-33 are rejected as unpatentable over Samsel. The reference discloses a sub-critical neutron amplifier wherein a plurality of sub-critical nuclear reactors are connected in a cascade so that the neutrons produced in one subcritical pile are fed into a cascade of successive subcritical piles, the initial neutron flux being amplified as it traverses the cascade of piles. The reference also discloses the use of means comprising a cadmium absorber between the output of a preceding pile and the moderator zone of a subsequent pile to provide an undirectional flow of neutrons. Although the reference does not indicate where the fuel zone is it must lie adjacent to the cadmium absorber or the desired effect of undirectional flow would not be obtained. The broad statement that means for varying the absorption of the cadmium be used does not patentably distinguish claims 28 and 29 since broadly such means would be an obvious way of controlling the system of the reference.

It is noted that the use of nuclear fuel in a hydrogeneous medium is old as shown by Glasstone of record.

Claims 1-15 and 17-26 are cancelled.

Claims 27-33 are rejected.

Claims 16 and 34 appear allowable.

S. F. STONE/wwl

Acting Examiner